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- 1. An isolated nucleic acid, wherein said nucleic acid is selected from the group consisting of:
 - (a) the nucleotide sequence of SEQ ID NO:1;
- (b) a fragment of the nucleotide sequence of (a) encoding a functional polypeptide fragment;
 - (c)\ a nucleotide sequence that is at least 85% identical to (a) or (b); and
 - (d) \ a nucleotide sequence complementary to (a), (b) or (c).
- 2. The nucleic acid of claim 1, wherein said nucleotide sequence is at least 90% identical to (a) or (b).
- 3. The nucleic acid of claim 1, wherein said nucleotide sequence is at least 95% identical to (a) or (b).
 - 4. A vector, wherein said yectof comprises the nucleic acid of claim 1.
 - 5. A host cell, wherein said host cell comprises the vector of claim 4.
- 6. The vector of claim 4, wherein said vector further comprises elements necessary for expression, wherein said elements necessary for expression are operably linked to said nucleic acid.
 - 7. A host cell, wherein said host cell comprises the expression vector of claim 6.
- 8. The nucleic acid of claim 1, wherein said nucleic acid encodes a polypeptide having the amino acid sequence of SEQ ID NO:2.
- 9. The nucleic acid of claim 1, wherein said nucleic acid encodes a bovine tumor necrosis factor receptor-I (TNF-RI).

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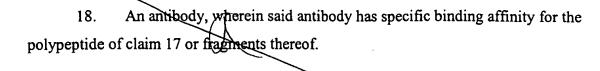
RI.

- 10. The nucleic acid of claim 9, wherein said bovine TNF-RI binds tumor necrosis factor (TNF).
- 11. The nucleic acid of claim 1, wherein said nucleic acid is selected from the group consisting of:
 - (a) the nucleotide sequence shown in SEQ ID NO:3;
- (b) a fragment of the nucleotide sequence of (a) encoding a functional polypeptide fragment;
 - (c) a nucleotide sequence that is at least 85% identical to (a) or (b); and
 - (d) a nucleotide sequence complementary to (a), (b) or (c).
- 12. The nucleic acid of claim 11, wherein said nucleic acid encodes a soluble bovine TNF-RI.
 - 13. The nucleic acid of claim 12, wherein said soluble bovine TNF-RI binds TNF.
- 14. The nucleic acid of claim 11, wherein said nucleic acid encodes a polypeptide having the amino acid sequence of SEQ ID NO:4.
 - 15. An isolated polypeptide, wherein said polypeptide comprises a bovine TNF-
- 16. An antibody, wherein said antibody has specific binding affinity for the polypeptide of claim 15 or fragments thereof.
- 17. The polypeptide of claim 15, wherein said polypeptide encodes a soluble bovine TNF-RI.

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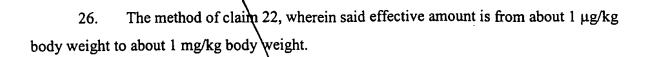


- 19. The polypeptide of claim 17, wherein said polypeptide comprises a bovine TNF-RI extracellular domain or fragments thereof, wherein said polypeptide binds TNF.
- 20. An isolated nucleic acid, wherein said nucleic acid encodes a fusion protein, wherein said fusion protein is encoded by the nucleic acid of claim 11 and a second nucleic acid sequence.
- 21. The nucleic acid of claim 20, wherein said second nucleic acid sequence is an antibody or fragment thereof.
- 22. A method of inhibiting TNF cytotoxicity in a bovine animal, comprising:
 administering an effective amount of one or more polypeptides, wherein said
 polypeptides comprise one or more soluble, functional polypeptide fragments of bovine
 TNF-RI,

wherein said soluble functional polypeptide fragment(s) of bovine TNF-RI bind TNF, thereby inhibiting said TNF cytotoxicity in said animal.

- 23. The method of claim 22, wherein said soluble, functional polypeptide fragment(s) of bovine TNF-RI are administered by direct infusion.
- 24. The method of claim 23, wherein said direct infusion is into said animal's mammary gland.
- 25. The method of claim 22, wherein said inhibition of TNF cytotoxicity in said animal is for treating mastitis.

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- 27. A pharmaceutical composition, comprising:
 - (a) one or more soluble, functional polypeptide fragments of bovine TNF-

RI; and

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- (b) a pharmaceutically acceptable carrier.
- 28. A kit, wherein said kit comprises:
 - (a) at least one unit dose of the pharmaceutical composition of claim 27.